

almanacks, clocks, and watches have done away with the necessity of using his eyes in this direction, and the modern priest, like the modern layman, though he prates about the heavens declaring the glory of God and the firmament showing His handiwork, too often does not know that the sun rises to the eastward, and, if he does, he imagines that it rises in the same place all the year round; *natura rerum* does not interest him.

The ancient priest need not have been a profound astronomer to build the monuments, which were simply calendars. I do not mean to say they were calendars and nothing more, but they were, from an astronomical point of view, simply calendars, enabling people to know and recognise from past experience the different parts of the year by the place of sunrise or sunset, and they were also night-dials, enabling them to differentiate between the early and the late hours of the night.

In my inquiry I have not confined myself to the astronomical side of the question. I have tried to dip into the folklore and tradition already garnered in relation, not only to the sacred stones, but to the sacred wells and sacred trees.

From what I have learned I am convinced that much light will be thrown on both when an attempt shall have been made to picture what the lives of the first British astronomer-priests must necessarily have been.

It is interesting to note that, while the astronomical side of the inquiry suggests a close connection with Egyptian thought, the folklore and traditions, when studied in relation with the monuments, indicate a close connection between the ancient British and the Semitic civilisations.

I do not wish for one moment to suggest that the work in all these various kinds of monuments was limited to practical astronomical purposes. Our traditions render that view impossible. There was worship in its highest forms, perhaps in its lowest forms; there was magic, there were all sorts of things going on in relation to the wants of the people, and it was because there were some people who did know all that was required to meet general and special needs, including their agricultural wants, that they eventually became priests, because they were the *men who knew*, and that I believe to be the origin of priestly power throughout the world.

This work, if subsequently confirmed by other investigators, has the double advantage of supplying us pretty accurately with the date of erection of the monuments and of indicating the methods of observing the movements of the sun and stars employed in Britain in prehistoric times; and if risings and settings were so abundantly utilised—for utility as well as priestcraft was certainly at the bottom of it—in Britain four thousand years ago, the remarkable testimony to the knowledge and wisdom of the "Druids" given by Cæsar and Pomponius Mela two thousand years nearer their time is now seen to be amply justified.

Multi praeterea de sideribus et eorum motu, de mundi magnitudine, de rerum natura, de deorum immortalium vi ac potestate disputant et juventuti tradunt.—Caes. De Bello Gallico, VI., c. 14.

Hi terrae mundique magnitudinem et formam, motus coeli ac siderum, ac quod dii velint scire, profutentur.—Pomp. Mela, II., c. 2.

The "Druids" of Cæsar's time were undoubtedly the descendants of the astronomer-priests some of whose daily work has now perhaps at last been revealed.

NORMAN LOCKYER.

## RECENT STUDIES ON ANIMAL AND PLANT LIFE.<sup>1</sup>

(1) THE second volume of "Nature-study" consists of three parts. The first of these is composed of chapters by Mr. O. H. Latter on sundry disconnected topics—some insects, centipedes, spiders, a mussel, and a snail. The second, written by Miss Newbigin, treats of fresh-water and marine aquaria. The last describes the haunts of animals and methods of field observation. It is due to Prof. Arthur Thomson. With such able coadjutors, the editor could hardly fail to produce a work of permanent value and of practical suggestiveness. The articles, taken singly, are excellent. The subjects are treated with accuracy and first-hand knowledge; practical difficulties are faced and often solved; lines of thought are suggested from a single fact. The only thing lacking is a better coordination between the topics, and the want of it has led, in this volume, to a regrettable amount of repetition. Mr. Latter describes, for example, the water-beetle and its life-history. Miss Newbigin repeats the story in connection with aquaria, and Prof. Thomson refers to it again in dealing with fresh-water faunas. Thus we have five figures of the same beetle and four of its larva (not always consistent). It is called *Dytiscus* at first and *Dytiscus* afterwards. Repetition also occurs in text and figure as regards the gnat, the pond-mussel, certain fish and hydroids. The text in other respects is not edited with care. Thus, with respect to the keeping of the pond-mussel, two of the contributors make contrary statements. These blemishes apart, the work is one that will give much pleasure and information to students of animal life, and stimulate to closer observation. The illustrations are of unequal merit, and many might have been saved or greater variety employed by a keener editor. The anatomical diagram at the commencement represents the structure of the pond-mussel.

(2) Prof. Kellogg, following in the footsteps of Fabre, gives a delightful series of episodes in the life of American insects. These have been told so well by his predecessors that it is difficult to introduce any novelty or charm to the description. But the visitations of insect pests in America give the author an opportunity for some new matter on scale-bugs and locusts. We can heartily recommend this little book for reading aloud to children.

(3) Mr. Farrer's rock-garden in Yorkshire is famous, and his advice will be most welcome to all who pursue this attractive form of imitating nature. In the present volume, a continuation of his former work, his experience and zeal are continually manifested, for Mr. Farrer has travelled far to watch and gather his alpine plants. Most amateur gardeners know too little of the principles on which rock- and bog-gardens are best planned, or of the natural habitats of the plants employed for stocking them. One of the great charms of this work is the way in which Mr. Farrer takes his readers into the resorts of his favourites, and describes the varying fortunes that have followed his attempts at acclimatisation. There is, for example, a description of the alpine near Arolla. The author's experience should be of great assistance to those who wish to know the best sites and conditions under which this class of plants can

<sup>1</sup> (1) "The Book of Nature-study." Edited by Prof. J. Bretland Farmer, F.R.S. Vol. ii. Pp. viii+202. (London: Caxton Publishing Co., n.d.) Price 7s. 6d.

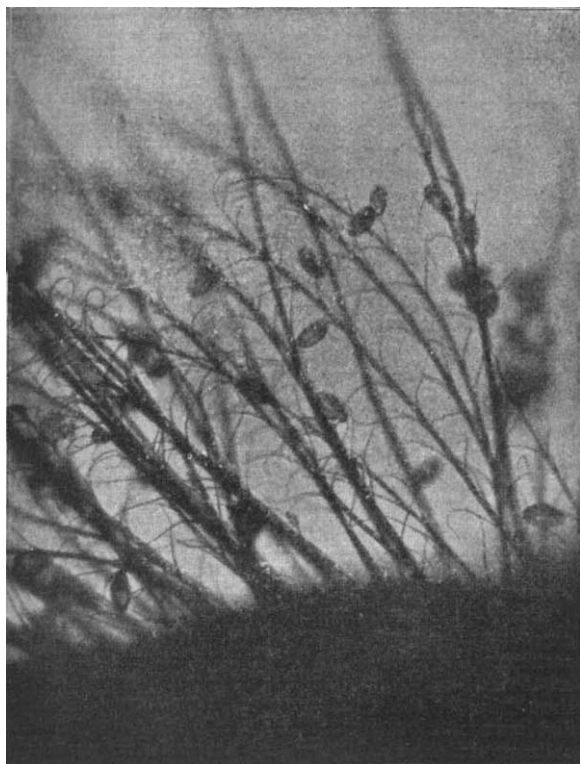
(2) "Insect Stories." By Vernon L. Kellogg. Pp. vii+298. (London: G. Bell and Sons; New York: Holt and Co., 1908.) Price 5s.

(3) "Alpine and Bog Plants." By Reginald Farrer. Pp. xii+288. (London: Edward Arnold, 1908.) Price 7s. 6d. net.

(4) "Life-histories of Familiar Plants." By John J. Ward. Pp. xx+204. (London: Cassell and Co., Ltd., 1908.) Price 6s.

be cultivated. Those who possess his earlier volume will require the supplementary one, and those who do not will, on reading this one, be anxious to possess it. The illustrations are very well executed, but have, as a rule, little connection with the text. The latter part of the book (dealing with bog-plants) is of especial value to those who are attracted to the practice of this frequently misunderstood style of decorative work. Among the alpine most heartily commended are *Saxifraga peltata*, *Oxalis enneaphylla*, *Hypericum reptans*, and *Hypericum coris*. The index contains several misprints.

(4) This book is a series of detached simple essays on problems presented and solved by familiar plants. In matter and plan, the book compares somewhat closely with the delightful essays by Prof. Miall. The constitutional advantages of such weeds as camomile



Hairs from Body of a Bee, showing Pollen Grains entangled. From "Life-histories of Familiar Plants."

and coltsfoot, the relation between insect fertilisation and floral adaptations, the markings of leaves and the fertilisation of grasses, the evolution of the buttercup order, and the movements of sensitive leaves are some of the topics which Mr. Ward discusses upon pleasantly and illustrates clearly. On some points, indeed, he offers new hypotheses, and it is with them that we shall chiefly deal, premising that the whole volume is full of suggestion, and is based upon close observation.

Among the problems of diverse form and detail with which the book deals, the diverse behaviour of certain composites at nightfall is one to strike the most casual observer. Daisies mark the oncoming of night by closing, camomile by opening more widely. The explanation here given is the protection of the nectaries from dew- and rain-depletion of their store. The outer florets only successfully protect the disc

of the flower from rain if they can cover it. If this is beyond their span, the method of acting as spouts to carry off the surplus moisture is an alternative rendered effective by the more horizontal position of the central florets on a raised disc. It is this adaptation which camomile effects, and such an explanation, whether new or not, is eminently a feature of the educational value of this work.

The relative evolutionary order and efficacy of colour and scent in relation to insect pollination of flowers is a point still in dispute; indeed, the dictum about cross-fertilisation being so eminently superior as a racial stimulus over self-fertilisation is coming up again for consideration. Most entomologists would, we think, consider scent of primary importance, and floral decoration as a means of directing the attracted insects to the right spot. The author, we notice, takes the view that the eye of the insect is caught first. It is, of course, almost impossible to write popularly on this subject without assuming a broad general conclusion as to its efficiency, which is, perhaps, hardly warranted. At least, the tendency to become dogmatic may blind us to a further explanation of these intricate associations between insects and plants that is as yet unknown. In this connection, we notice that, without stating definitely what insect pollinates the primrose, the author refers to the bee or the moth as doing it, in a misleading way. He would have been wiser to ask readers to notice what insect is really effective in the case of this plant. Neither honey-bees nor moths are known to be so. An interesting chapter is given to the markings of spotted orchis-leaves.

"The exposed part of the olive body of the viper, striped and spotted with dark markings . . . was almost identical with the appearance of some of the leaves of the orchis when similarly placed."

This resemblance is said in a footnote to be borne out by the occurrence of unspotted leaves of the plant in Ireland, where, of course, the viper is absent. But at present the suggestion, instead of throwing light on the subject, makes it more mysterious than ever, for it is surely more to the point to regard the viper as assimilating to the spotted leaves than *vice-versâ*, and for that there is as yet no particle of evidence. We could have wished for more information on grasses. We notice also the strange word "trinary." The illustrations are very good.

#### REFORM AT CAMBRIDGE.

FOR the last eighteen months the University has been inquiring into its management and constitution with the view of reform. At the end of his first year of office in October, 1907, the then Vice-Chancellor, the Rev. E. S. Roberts, the Master of Gonville and Caius College, spoke these words to the Senate:—

"I venture to touch now on dangerous ground. It is a matter of common knowledge that in a recent debate of the House of Lords some of the speakers urged His Majesty's Government to appoint a Royal Commission to inquire into the endowment, government, administration, and teaching of the Universities of Oxford and Cambridge and of their constituent colleges, in order to secure the best use of their resources for the benefit of all classes of the community. The Government, through their spokesman the Earl of Crewe, held that the moment was not opportune for appointing such a Commission, nor did he encourage the idea that a Royal Commission should be appointed in the immediate future.

"The attitude of neutrality incumbent by a whole-